

Serial No.: 09/603,764

- 6 -

Art Unit: 1714

REMARKS

Claims 17-19, 40-47, and 49-57 were pending in this application.

Claims 1-16 have been previously cancelled without prejudice or disclaimer. Claims 20-39 have been withdrawn from consideration. Claims 46-57 are cancelled without prejudice or disclaimer.

No claims have been amended.

No new claims have been added.

As a result claims 17-19 and 40-45 are pending for examination with claim 17 being the only independent claim. No new matter has been added.

Provisional Double Patenting Rejection

Claims 17-19, 40-45, 46-47, and 49-57 have been provisionally rejected under the judicially created doctrine of double patenting over all the claims of co-pending U.S. Patent Application Serial No. 10/013,879.

Applicant acknowledges the provisional double patenting rejection and reserves the opportunity to respond accordingly, if necessary.

Rejections under 35 U.S.C. § 103

Claims 17-19, 40-44, 46-47, 52, and 54-57 have been rejected under 35 U.S.C. § 103(a) as being obvious over the teaching of Derule *et al.* in U.S. Patent No. 5,814,247 ("the '247 patent") in view of the teaching of Gusmano *et al.* in "Electrochemical Noise Resistance as a Tool for Corrosion Rate Prediction," ("XP-001073846") or the teaching of Jovancicevic in WO00/34760.

Claims 45, 50-51, and 53 have been rejected under 35 U.S.C. § 103(a) as being obvious over the teaching of the '247 patent in view of the teaching of any one of Freese *et al.* in U.S. Patent No. 5,575,920 ("the '920 patent"), Chen *et al.* in U.S. Patent No. 4,913,822 ("the '822

Serial No.: 09/603,764

- 7 -

Art Unit: 1714

patent”), or Kessler *et al.* in U.S. Patent No. 5,866,013 (“the ‘013 patent”), and further in view of the teaching of XP-001073846 or WO00/34760.

Claims 17-19, 40-44, 46-47, 49, 54-55, and 57 have been rejected under 35 U.S.C. § 103(a) as being obvious over the teaching of Goudiakas *et al.* in U.S. Patent No. 6,120,619 (“the 619 patent”) in view of the teaching of XP-001073846 or WO00/34760.

Claims 45, 50-53, and 56 have been rejected under 35 U.S.C. § 103(a) as being obvious over the teaching of the ‘619 patent in view of the teaching of any one of the ‘920 patent, the ‘822 patent, the ‘013 patent, or the ‘247 patent (for claim 52 only), and further in view of the teaching of XP-001073846 or WO00/34760.

Claims 17-19, 44, 46-47, 49, and 54 have been rejected under 35 U.S.C. § 103(a) as being obvious over the teaching of Lagana in EP504621 (“EP504621”) in view of the teaching of XP-001073846 or WO00/34760.

Claims 52 and 56-57 have been rejected under 35 U.S.C. § 103(a) as being obvious over the teaching of EP504621 in view of the teaching of the ‘247 patent and further in view of the teaching of XP-001073846 or WO00/34760.

Claims 50-51 and 53 have been rejected under 35 U.S.C. § 103(a) as being obvious over the teaching of EP504621 in view of the teaching of any one of the ‘920 patent, the ‘822 patent, or the ‘013 patent, and further in view of the teaching of XP-001073846 or WO00/34760.

Claims 17-19, 40-44, 46-47, 50-51, and 54 have been rejected under 35 U.S.C. § 103(a) as being obvious over the teaching of May in WO89/08728 (“WO89/08728”) in view of the teaching of XP-001073846 or WO00/34760.

Claims 52 and 56-57 have been rejected under 35 U.S.C. § 103(a) as being obvious over the teaching of WO89/08728 in view of the teaching of the ‘247 patent and further in view of the teaching of XP-001073846 or WO00/34760.

Claims 45 and 53 have been rejected under 35 U.S.C. § 103(a) as being obvious over the teaching of WO89/08728 in view of the teaching of any one of the ‘920 patent, the ‘822 patent, or the ‘013 patent, and further in view of the teaching of XP-001073846 or WO00/34760.

Applicant disagrees that claims 17-19, 40-44, 46-47, 52, and 54-57 would have been obvious in view of the teaching of the ‘247 patent in view of the teaching of XP-001073846 or

702459.1

Serial No.: 09/603,764

- 8 -

Art Unit: 1714

the teaching of WO00/34760. The rejection is improper as failing to establish a *prima facie* case of obviousness. Even if there were a *prima facie* case of obviousness, which Applicant does not concede, the rejection is overcome because the references teach away from the claimed invention. Any objection based on obviousness is further rebutted because the proposed combination would result in a method that lacks at least one limitation recited in the present claims.

Obviousness is determined based on the underlying factual inquiries including the scope and content of the prior art, the level of ordinary skill in the prior art, the differences between the claimed invention and the prior art, and objective evidence of nonobviousness. In re Dembiczak, 175 F.3d 994 (Fed. Cir. 1994) (citing Graham v. John Deere Co., 383 U.S. 1 (1966) and Miles Labs, Inc. v. Shandon, Inc., 997 F.2d 870 (Fed. Cir. 1993)). A *prima facie* case of obviousness is established by presenting evidence that the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the references before him to make the proposed combination. The conclusion that the claimed subject matter is *prima facie* obvious must be supported by evidence, as shown by some objective teaching in the prior art or by knowledge generally available to one of ordinary skill in the art that would have led that individual to combine the relevant teachings of the references to arrive at the claimed invention. In re Fine, 837 F.2d 1071 (Fed. Cir. 1988). Obviousness rejections must rest on a factual basis, with these facts being interpreted without hindsight reconstruction of the invention from the prior art and without resort to speculation, unfounded assumption or hindsight reconstruction to supply deficiencies in the factual basis. In re Warner, 379 F.2d 1011 (CCPA 1967).

The '247 patent teaches an aqueous solution for the cold-working treatment of steel sheet. (The '247 patent at column 2, line 66 to column 5, line 46.) The solution contains a water-soluble salt of heptanoic acid, i.e., sodium heptanoate, and an oxidizing agent, i.e., sodium perborate. The '247 patent teaches spraying the solution on the surfaces of the steel. (Id.) The '247 patent notes that by utilizing the disclosed aqueous solution, degreasing the steel can be avoided, which would be performed if the prior art aqueous oil emulsions were utilized. (The '247 patent at column 2, lines 57-62.) Significantly, the '247 patent does not teach, suggest or provide any motivation for an activity factor, measuring an activity factor or flushing an anionic oxidizer from the surface of a metal. Moreover, the '247 patent seeks to avoid utilizing

702459.1

Serial No.: 09/603,764

- 9 -

Art Unit: 1714

degreasing operations by utilizing an aqueous treatment solution. Thus, one skilled in the art, upon reading the '247 patent as a whole, would have been led to avoid removing the applied solution from the metal surface, thereby teaching away from the present invention.

XP-001073846 teaches that corrosion can be monitored by utilizing potential and current electrochemical noise (EN) measurements, which are the fluctuations and variations of the free-corrosion potential and current as measured by electrodes. (XP-001073846 at pages 860, 864-868, Figures 11-19.) Like the '247 patent, XP-001073846 does not teach, suggest, or provide any motivation for an activity factor or measuring an activity factor or flushing an anionic oxidizer from the surface of a metal. Moreover, XP-001073846 fails to recognize the advantages in utilizing an activity factor. Rather, the reference directs the use of the standard deviations of potential and current electrochemical noise to characterize corrosion. In particular, the reference teaches that R_n , noise resistance, which is the ratio of the standard deviations of potential and current electrochemical noise (σ_v/σ_i), can be directly correlated to R_p , polarization resistance as determined by linear polarization techniques. (XP-001073846 at pages 864-868 and Figures 12-15.) Significantly, the reference fails to recognize the utility of an activity factor, the standard deviation of electrochemical current noise normalized by the root mean square of the current.

WO00/34760 teaches a technique for corrosion rate determination that is based electrochemical noise. The technique utilizes one working electrode to eliminate error associated with differences created by two working electrodes. (WO00/34760 at pages 4-6 and 10.) However, WO00/34760 does not teach, suggest, or provide any motivation for utilizing an anionic oxidizer to passivate a metal surface or flushing the anionic oxidizer from the surface of the metal. Moreover, WO00/34760 teaches against utilizing the ratio of the standard deviation of electrochemical current noise to the root mean square of the current (σ_i/i_{rms}) and directs the use of P-ECN techniques based on the change in the root mean square of the current noise or the noise resistance (σ_v/σ_i). (WO00/34760 at page 9, lines 12 *et seq.*) Thus, like XP-001073846, WO00/34760 teaches against determining an activity factor.

Because there is no teaching, suggestion, or motivation to modify the aqueous treatment solution technique of the '247 patent by incorporating steps of flushing and measuring an activity factor, there is no *prima facie* case of obviousness. *In re Sang Su Lee*, 277 F.3d 1338 (Fed. Cir.

Serial No.: 09/603,764

- 10 -

Art Unit: 1714

2002) (quoting Brown & Williamson Tobacco Corp. v. Philip Morris Inc., 229 F.3d 1120 (Fed. Cir. 2000)).

The Examiner posits that because "Derule et al. discloses treating steel sheets with the disclosed passivating composition wherein the steel sheets are manufactured into welded pipes" that "a flushing step would thus be at once envisaged by one having ordinary skill in the art in such a process." Furthermore, the Examiner summarily concludes that it "would have been obvious to one having ordinary skill in the art to use the clear teachings of either 'XP-001073846 Electrochemical Noise Resistance as a Tool for Corrosion Rate Prediction', or WO 00/34760 that the determination of 'an activity factory [sic] of a metal' or 'monitoring an electrochemical noise of a metal' are well known techniques in the corrosion art to determine/predict the extent of metal corrosion, as motivation to actually perform such activities."

The Examiner has not identified any portion of the disclosures of the '247 patent, XP-001073846, or WO00/34760 that provides any teaching, suggestion or motivation for a method of controlling corrosion of a surface of a metal comprising steps of passivating the surface of the metal with an anionic oxidizer, flushing the anionic oxidizer from the surface of the metal, and determining an activity factor of the metal. Conclusory statements do not adequately address the issue of motivation to combine and there must be evidence of record and reasoned explanation to support the conclusion. In re Sang Su Lee, 277 F.3d 1338 (Fed. Cir. 2002). There must be a showing of a motivation to combine the references and an explanation as to "what specific understanding or technological principle within the knowledge of one of ordinary skill in the art would have suggested the combination. In re Rouffett, 149 F.3d 1350 (Fed. Cir. 1998). There has been no such showing or explanation, which leads to the conclusion that these references were selected with the assistance of hindsight. Id.

Significantly, because the references teach against utilizing an activity factor, one skilled in the art would not be motivated to modify the teaching of the '247 patent with the teaching of XP-001073846 or the teaching of WO00/34760.

Furthermore, based on such teachings, even if the teaching of the '247 patent could have been combined with the teaching of XP-001073846 or the teaching of WO00/34760, which Applicant does not concede, the proposed combination would not have resulted in the claim invention. Rather, the likely combination would, at best, result in a method utilizing an aqueous

702459.1

Serial No.: 09/603,764

- 11 -

Art Unit: 1714

treatment solution in conjunction with electrochemical resistance noise ($R_n = \sigma_v / \sigma_i$) measurements.

For at least the foregoing reasons, the rejection of claims 17-19, 40-44, 46-47, 52, and 54-57 as being obvious over the teaching of the '247 patent in combination with the teaching of XP-001073846 or the teaching of WO00/34760 has been overcome.

Applicant disagrees that claims 17-19, 40-44, 46-47, 49, 54-55, and 57 would have been obvious over the teaching of the '619 patent in view of the teaching of XP-001073846 or WO00/34760. This rejection is also improper for failing to a *prima facie* case of obviousness.

The '619 patent teaches utilizing electrochemical potential (E) to characterize the effectiveness of oxidizing agents to protect treat stainless steel against corrosion by organosulphonic acids, methanesulphonic acid (MSA) in particular. The oxidizing agents are cerium (IV), iron (III), molybdenum (VI) or vanadium (V) oxides or salts, nitrites and persulphates. (The '619 patent at column 1, line 1 to column 2, line 67.) The '619 patent teaches that the rate of dissolution of stainless steel immersed in MSA depends on electrochemical potential and that a comparison of the spontaneous potential (E) to the passivation potential (E_p) and the transpassivation potential (E_{tp}) permits instantaneous determination of whether the stainless steel is corroding. (Id.) The '619 patent demonstrates the effectiveness of the various oxidizing agents by noting that the measured spontaneous potential falls between the passivation and transpassivation potentials, minimizing the risks of generalized corrosion. (The '619 patent at the Examples.)

Clearly the '619 patent seeks only to characterize the effectiveness of the listed oxidizing agents and does not seek to further characterize the nature of the measured electrochemical potential. The '619 patent does not teach, suggest, or provide any motivation for measuring or determining an activity factor, electrochemical current noise, the standard deviation of electrochemical noise, or the root mean square of electrochemical noise. Thus, there is no *prima facie* case of obviousness.

Significantly, as mentioned above, XP-001073846 and WO00/34760 teach against using electrochemical potential (E) but promote the characterization of electrochemical potential and

Serial No.: 09/603,764

- 12 -

Art Unit: 1714

current noise (σ_v/σ_i). Thus, the teachings of the references diverge or contradict, which undermines the likelihood of success of the proposed combination.

The Examiner again summarily concludes that it "would have been obvious to one having ordinary skill in the art to use the clear teachings of either 'XP-001073846 Electrochemical Noise Resistance as a Tool for Corrosion Rate Prediction', or WO 00/34760 that the determination of 'an activity factory [sic] of a metal' or 'monitoring an electrochemical noise of a metal' are well known techniques in the corrosion art to determine/predict the extent of metal corrosion, as motivation to actually perform such activities."

Like the previous rejection, the Examiner has not identified any portion of the disclosures of the '619 patent, XP-001073846, or WO00/34760 that provides any teaching, suggestion or motivation for a method of controlling corrosion of a surface of a metal comprising steps of passivating the surface of the metal with an anionic oxidizer, flushing the anionic oxidizer from the surface of the metal, and determining an activity factor of the metal. There has been no showing or explanation for a motivation to combine or any explanation that would have suggested the combination, which leads to the conclusion that these references were also selected with the assistance of hindsight. In re Sang Su Lee, 277 F.3d 1338 (Fed. Cir. 2002). In re Rouffett, 149 F.3d 1350 (Fed. Cir. 1998).

Moreover, even if the teaching of the '619 patent could be combined with the teaching of XP-001073846 or WO00/34760, which Applicant also does not concede, the resultant combination would not result in the invention as claimed. At best, the resultant combination would result in a corrosion treatment method for stainless steel in a MSA environment utilizing an oxidizing agent, the corrosion protection associated with addition of which would be characterized utilizing electrochemical potential and current noise techniques to maintain conditions in the passive regime.

For at least the foregoing reasons, the rejection of claims 17-19, 40-44, 46-47, 49, 54-55, and 57 as being obvious over the teaching of the '619 patent in combination with the teaching of XP-001073846 or the teaching of WO00/34760 has been overcome.

Applicant also disagrees that claims 17-19, 44, 46-47, 49, and 54 would have been obvious over the teaching of EP504621 in view of the teaching of XP-001073846 or

702459.1

Serial No.: 09/603,764

- 13 -

Art Unit: 1714

WO00/34760. None of the references provides any teaching, suggestion, or motivation for the invention as claimed. Therefore, this rejection is also improper for failing to a *prima facie* case of obviousness.

EP504621 teaches passivation of metal surfaces by exposing the metal surfaces to oxygen and a second, auxiliary oxidizing agent. EP504621 seeks to reduce the risk of explosion during passivation by reducing the concentration of gaseous oxygen and substituting or supplementing therefor a synergistic amount of an oxidizer, ozone. However, EP504621 does not teach, suggest, or provide any motivation for measuring or determining an activity factor, electrochemical current noise, the standard deviation of electrochemical noise, or the root mean square of electrochemical noise. Thus, there is no *prima facie* case of obviousness.

As with the previous references, the Examiner summarily concludes that "it would have been obvious to one having ordinary skill in the art to use the clear teachings of either 'XP-001073846 Electrochemical Noise Resistance as a Tool for Corrosion Rate Prediction', or WO 00/34760 that the determination of 'an activity factory [sic] of a metal' or 'monitoring an electrochemical noise of a metal' are well known techniques in the corrosion art to determine/predict the extent of metal corrosion, as motivation to actually perform such activities."

As with the previous references, the Examiner has not identified any portion of the disclosures of EP504621, XP-001073846, or WO00/34760 that provides any teaching, suggestion, or motivation for a method of controlling corrosion of a surface of a metal comprising steps of passivating the surface of the metal with an anionic oxidizer, flushing the anionic oxidizer from the surface of the metal, and determining an activity factor of the metal. There has been no showing or explanation for a motivation to combine or any explanation that would have suggested the combination, which leads to the conclusion that these references were also selected with the assistance of hindsight. *In re Sang Su Lee*, 277 F.3d 1338 (Fed. Cir. 2002). *In re Rouffett*, 149 F.3d 1350 (Fed. Cir. 1998).

Even if the teachings of the references could have been combined, which Applicant does not concede, the proposed combination would not result in the invention as claimed. The resultant combination would result in a method utilizing air and an auxiliary oxidizing agent to

702459.1

Serial No.: 09/603,764

- 14 -

Art Unit: 1714

passivate stainless steel and electrochemical potential and current noise techniques to characterize the nature of corrosion or, at best, to monitor the extent of passivation.

For at least the foregoing reasons, the rejection of claims 17-19, 44, 46-47, 49, and 54 as being obvious over the teaching of EP504621 in combination with the teaching of XP-11-073846 or the teaching of WO00/34760 has been overcome.

Applicant also disagrees that claims 17-19, 40-44, 46-47, 50-51, and 54 would have been obvious over the teaching of WO89/08728 in view of the teaching of XP-001073846 or WO00/34760. As with the previous rejections, this rejection is also improper for failing to a *prima facie* case of obviousness.

WO89/08728 teaches increasing the redox potential of a corrosive liquid before it contacts a metallic surface to cause the formation of a protective oxide layer on the metallic surface. Increasing the redox potential is effected by adding a suitable oxidizing agent, H_2O_2 , $NaHO_2$, O_2 , O_3 , $NaNO_2$ and $KMnO_4$. However, WO89/08728 does not teach, suggest, or provide any motivation for measuring or determining an activity factor, electrochemical current noise, the standard deviation of electrochemical noise, or the root mean square of electrochemical noise. Thus, none of the references provides any teaching, suggestion, or motivation for the invention as claimed. Therefore, there is no *prima facie* case of obviousness.

Again the Examiner summarily concludes that "it would have been obvious to one having ordinary skill in the art to use the clear teachings of either 'XP-001073846 Electrochemical Noise Resistance as a Tool for Corrosion Rate Prediction', or WO 00/34760 that the determination of 'an activity factory [sic] of a metal' or 'monitoring an electrochemical noise of a metal' are well known techniques in the corrosion art to determine/predict the extent of metal corrosion, as motivation to actually perform such activities."

The Examiner has not identified any portion of the disclosures of WO89/08728, XP-001073846, or WO00/34760 that provides any teaching, suggestion, or motivation for a method of controlling corrosion of a surface of a metal comprising steps of passivating the surface of the metal with an anionic oxidizer, flushing the anionic oxidizer from the surface of the metal, and determining an activity factor of the metal. There has been no showing or explanation for a motivation to combine or any explanation that would have suggested the combination, which

702459.1

Serial No.: 09/603,764

- 15 -

Art Unit: 1714

leads to the conclusion that these references were also selected with the assistance of hindsight. In re Sang Su Lee, 277 F.3d 1338 (Fed. Cir. 2002). In re Rouffett, 149 F.3d 1350 (Fed. Cir. 1998).

Likewise, even if the teaching of WO89/08728 could have been combined with the teaching of XP-001073846, or the teaching of WO00/34760, which Applicant does not concede, the proposed combination would not result in the invention as claimed. At best, the resultant combination would result in a method comprising a step of increasing the redox potential of a corrosive liquid before it contacts a metallic surface to form a protective oxide layer on the metallic surface and utilizing electrochemical potential and current noise techniques to characterize the nature of corrosion.

For at least the foregoing reasons, the rejection of claims 17-19, 44, 46-47, 49, and 54 as being obvious over the teaching of WO89/08728 in combination with the teaching of XP-001073846 or the teaching of WO00/34760 has been overcome.

Dependent claims 18-19, and 40-44 depend from independent claim 17. These claims would not have been obvious over the teachings of any of the cited references for at least the same reasons. Moreover, these claims are patentable because none of the references teach, suggest, or provide any motivation for a method of controlling corrosion of a surface of a metal comprising steps of passivating the surface of the metal with an anionic oxidizer, flushing the anionic oxidizer from the surface of the metal, and determining an activity factor of the metal, wherein the anionic oxidizer consists essentially of hydrogen peroxide.

Claims 46-47 and 49-57 have been cancelled to further the prosecution of this application. Accordingly, the rejection of these claims as being obvious over the teaching of each of the cited references, alone or in any combination, has been rendered moot.

For at least the foregoing reasons, the rejections under 35 U.S.C. § 103 has been overcome and withdrawal of the rejection is respectfully requested.

702459.1

Serial No.: 09/603,764

- 16 -

Art Unit: 1714

CONCLUSION

In view of the foregoing Amendments and Remarks, this application is in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes that the application is not in condition for allowance, the Examiner is requested to call Applicant's attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee that is not covered by an enclosed check please charge any deficiency to Deposit Account No. 50/0214.

Respectfully submitted,
Roy Martin, Applicant

By: 

Peter C. Lando, Reg. No. 34,654
Elias Domingo, Reg. No. 52,827
LOWRIE, LANDO & ANASTASI, LLP
One Main Street
Cambridge, Massachusetts 02142
United States of America
Telephone: 617-395-7000
Facsimile: 617-395-7070

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